

CHAPTER 2

DESCRIPTION OF THE WHEELER LAKE WATERSHED

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2.1. BACKGROUND. Upper elevations of the Wheeler Lake Watershed contain many beautiful streams flowing toward the Alabama border to the Elk River. Swine and dairy farms dot the landscape, and the area's rich timber supply supports lumber mills as a basic industry.

Barrens and former prairie areas are now mostly oak thickets or pasture and cropland. Numerous springs and spring-associated fish fauna typify the region.

This Chapter describes the location and characteristics of the Tennessee portion of the Wheeler Lake Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Wheeler Lake Watershed is located in Middle Tennessee and Alabama. The Tennessee portion includes parts of Franklin, Giles, Lawrence, and Lincoln Counties.

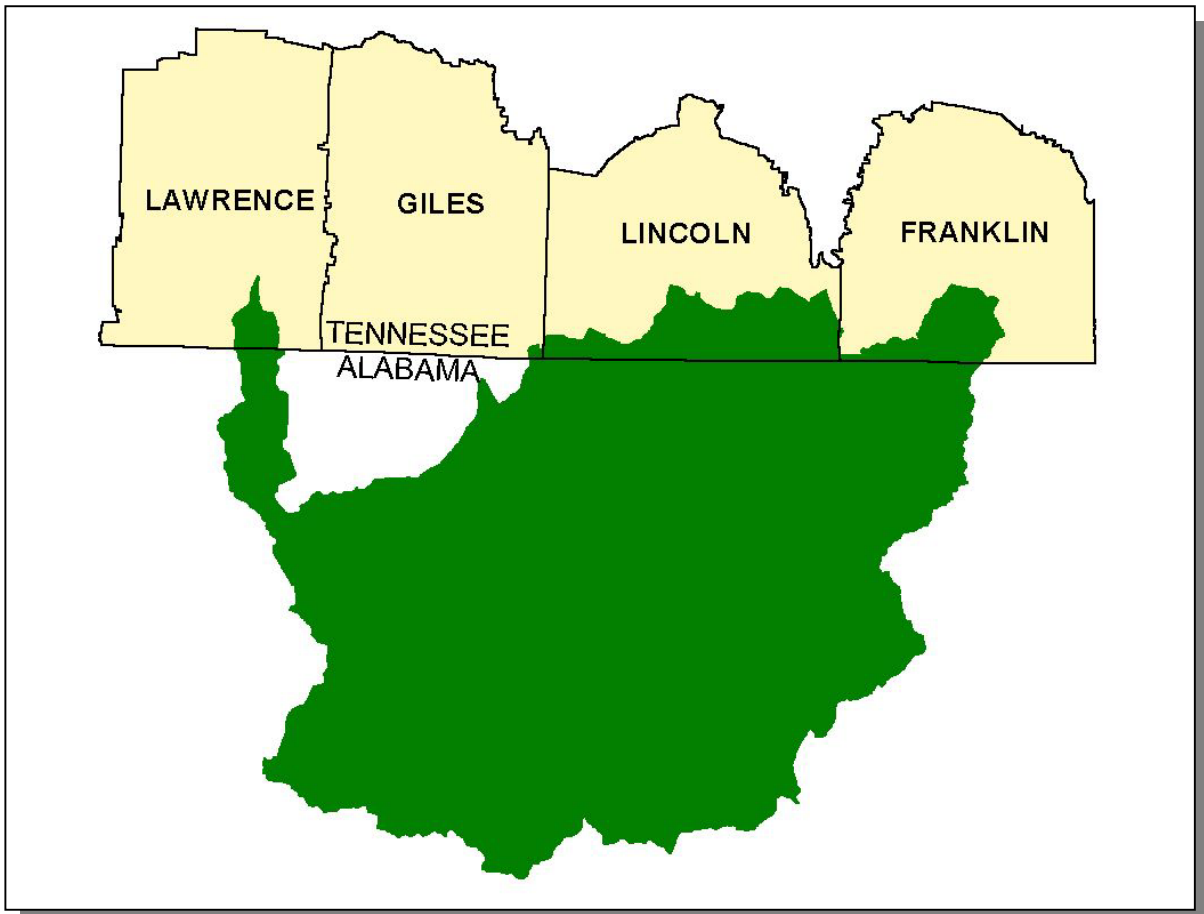


Figure 2-1. General Location of the Wheeler Lake Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Lincoln	67.2
Franklin	31.4
Lawrence	9.9
Giles	1.3

Table 2-1. The Wheeler Lake Watershed Includes Parts of Four Middle Tennessee Counties.

2.2.B. Population Density Centers. Two state highways serve the major communities in the Tennessee portion of the Wheeler Lake Watershed.

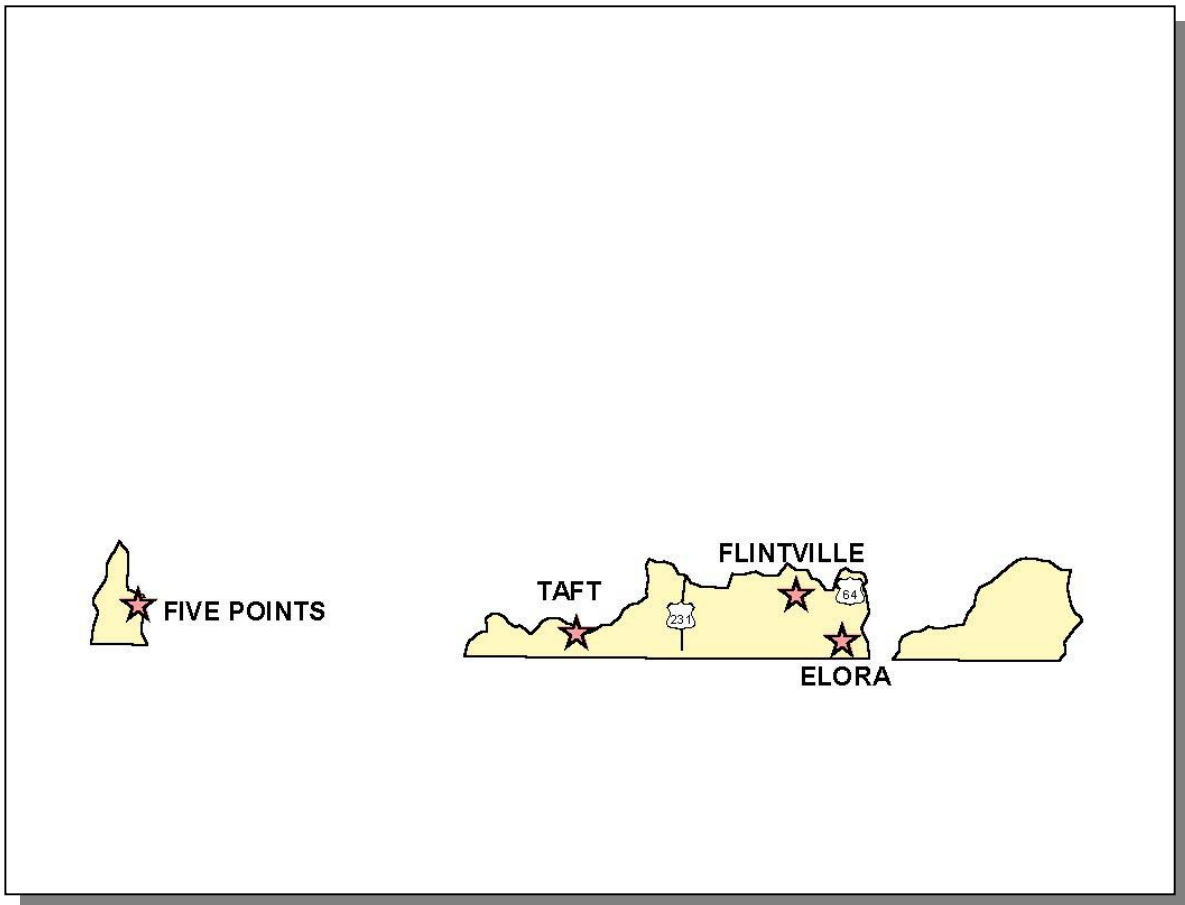


Figure 2-2. Municipalities and Roads in the Tennessee Portion of Wheeler Lake Watershed.

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Wheeler Lake Watershed, designated 06030002 by the USGS, drains approximately 2,876 square miles, 236 of which are in Tennessee, and empties to the Tennessee River.

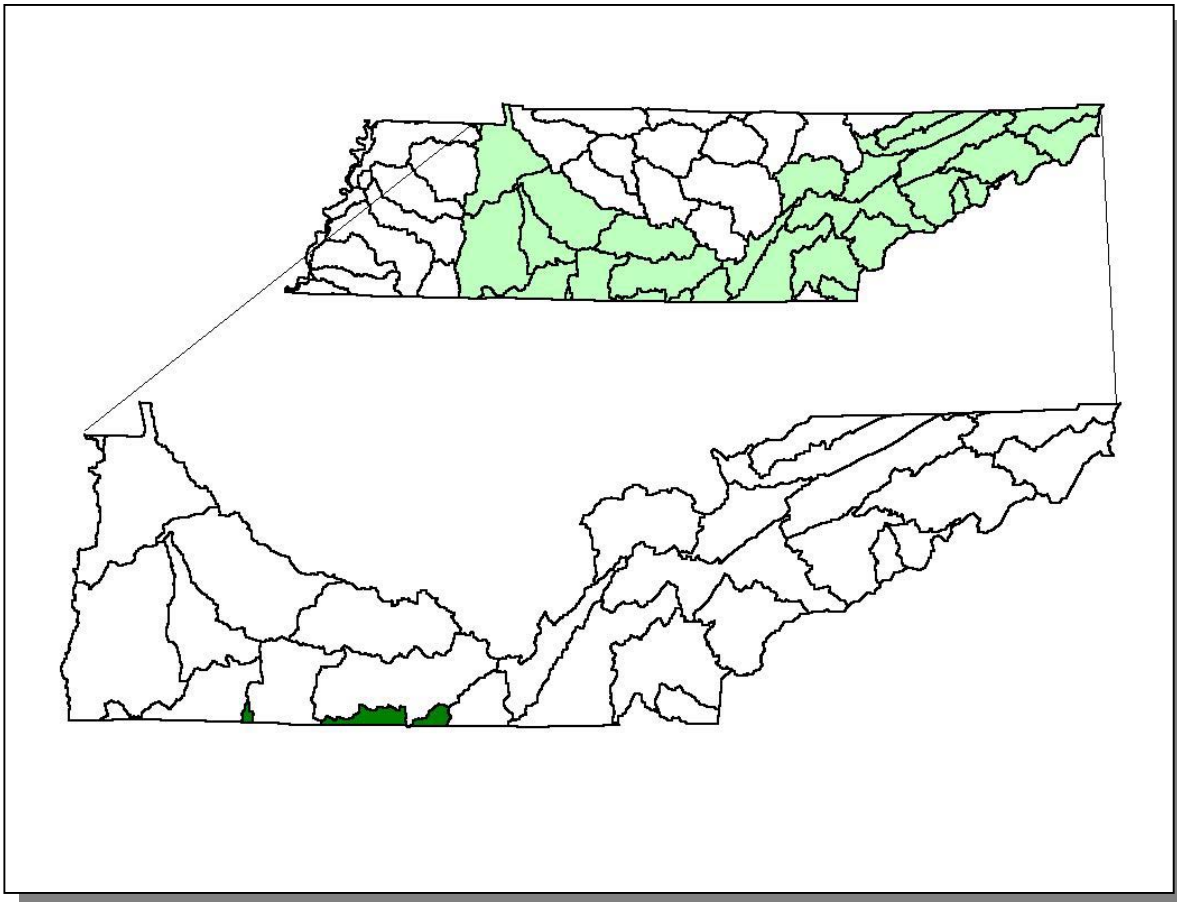


Figure 2-3. The Wheeler Lake Watershed is Part of the Tennessee River Basin.

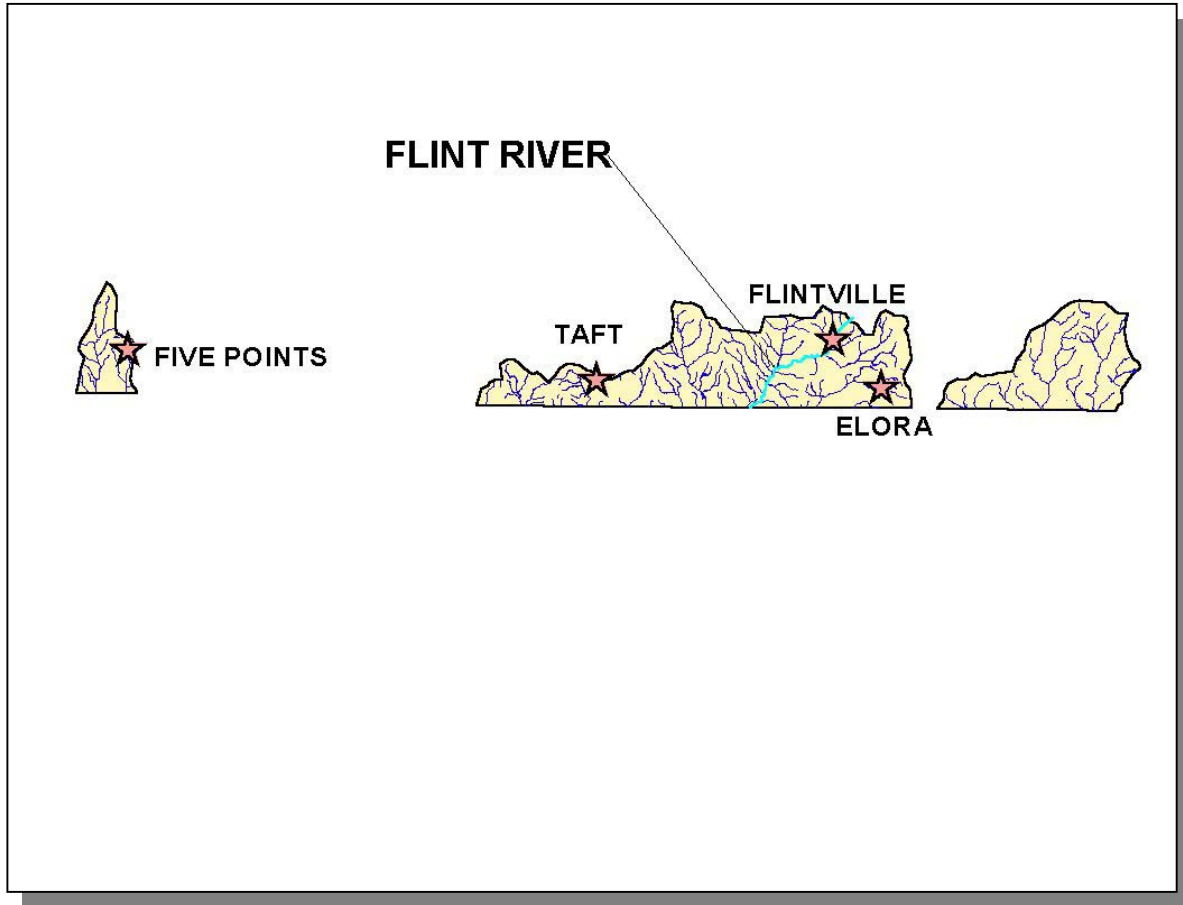


Figure 2-4. Hydrology in the Tennessee Portion of the Wheeler Lake Watershed. There are 3,767 total stream miles recorded in River Reach File 3 in the Wheeler Watershed. 313 stream miles are recorded in Tennessee. Location of Flint River and the cities of Elora, Five Points, Flintville, and Taft are shown for reference.

2.3.B. Dams. There are 5 dams inventoried by TDEC Division of Water Supply in the Wheeler Lake Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

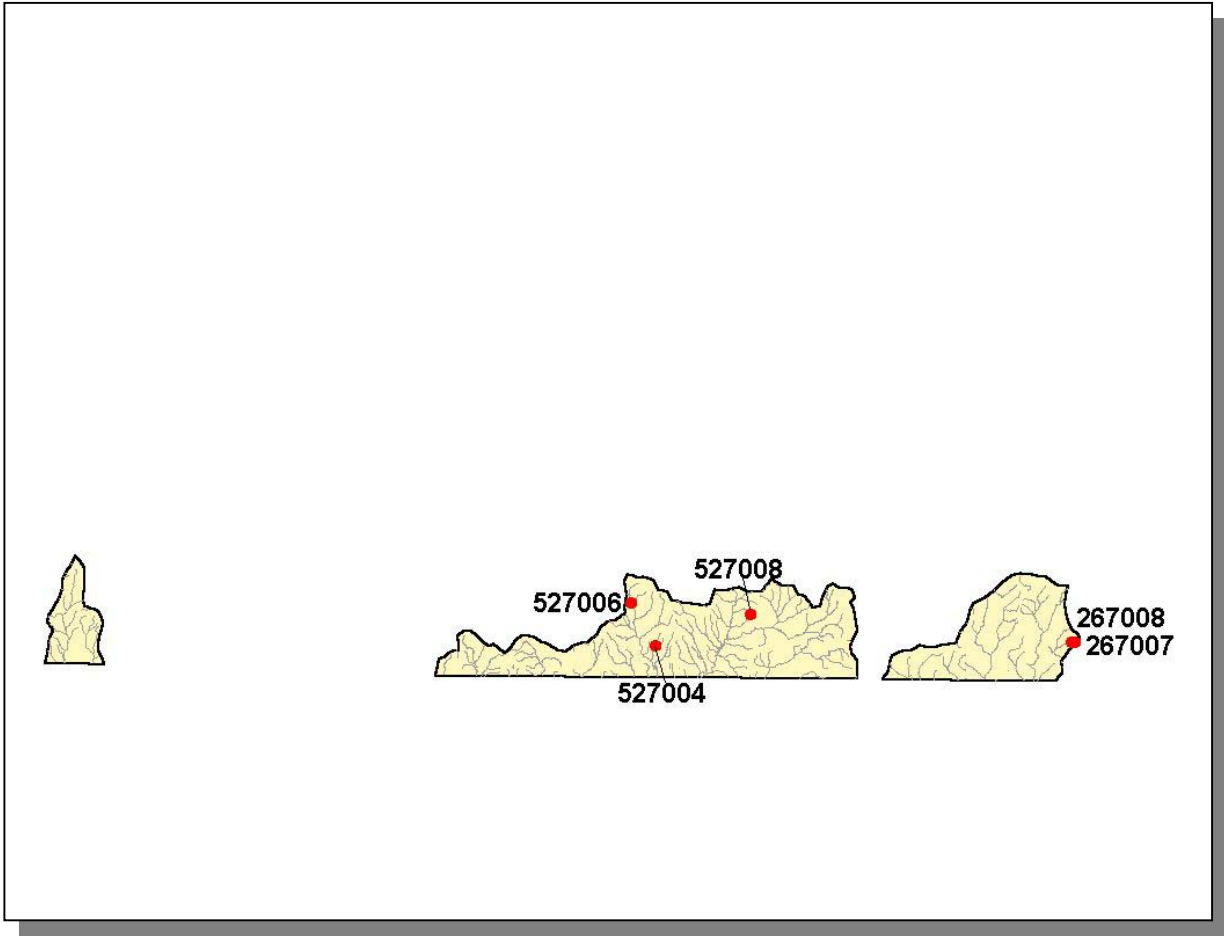


Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Wheeler Lake Watershed. More information is provided in Wheeler-Appendix II and on the TDEC homepage at: <http://gwidc.gwi.memphis.edu/website/dams/viewer.htm>

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

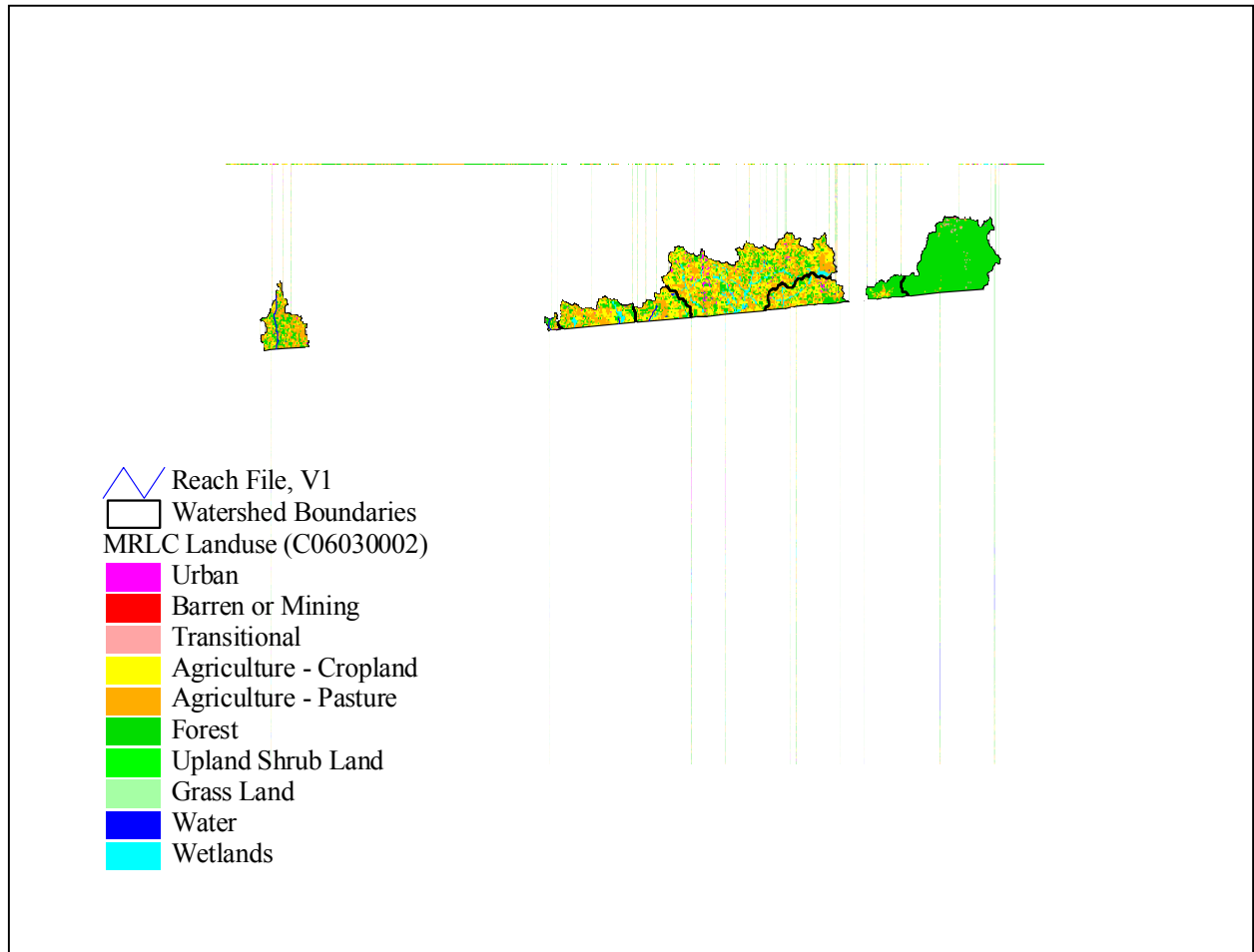


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

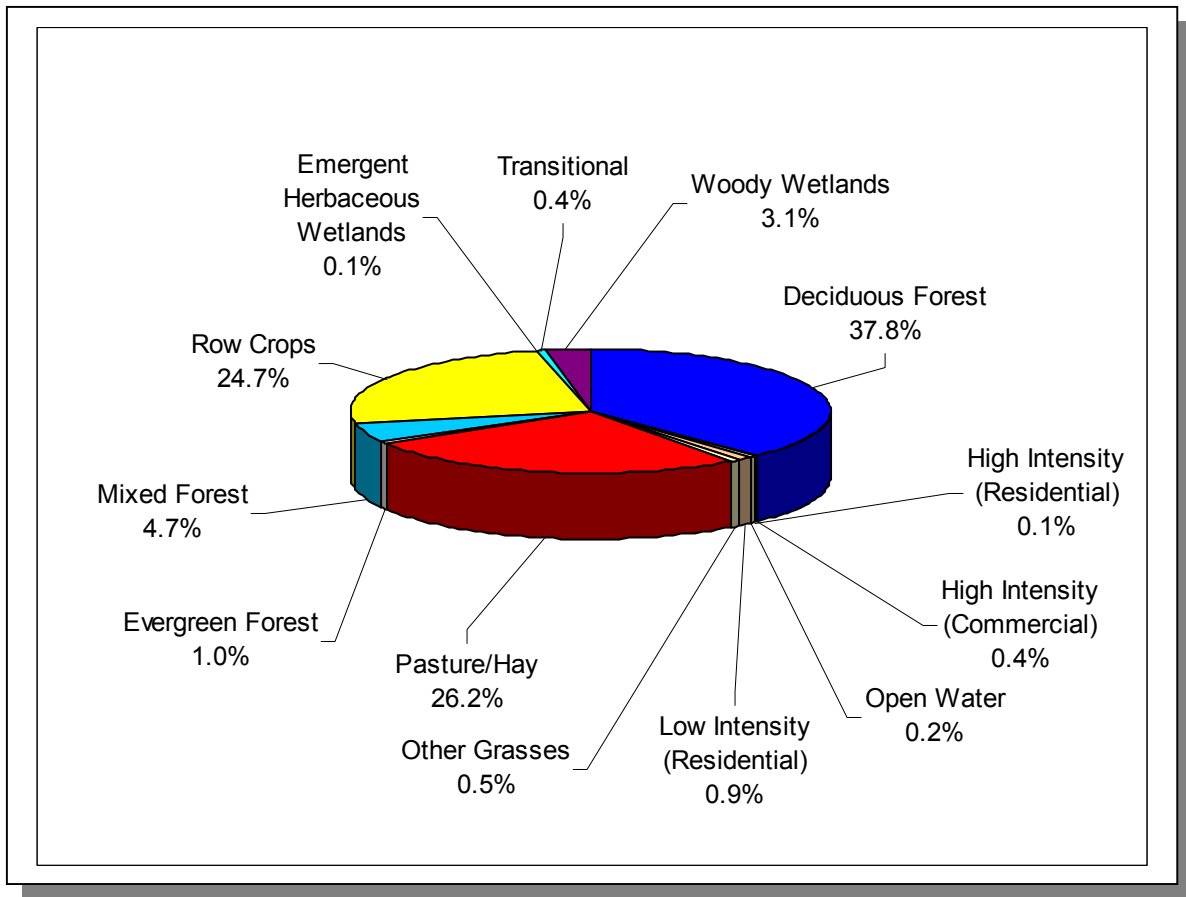


Figure 2-7. Land Use Distribution in the Tennessee Portion of the Wheeler Lake Watershed. More information is provided in Wheeler-Appendix II.

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Wheeler Watershed lies within 2 Level III ecoregions (Interior Plateau and Southwestern Appalachians) and contains 5 Level IV subecoregions (Griffen, Omernik, Azavedo):

- The Cumberland Plateau (68a)'s tablelands and open low mountains are about 1000 feet higher than surrounding lower-level ecoregions. The plateau surface is less dissected with lower relief compared to the Cumberland Mountains or the Plateau Escarpment. Elevations are generally 1200-2000 feet, with the Crab Orchard Mountains reaching over 3000 feet. Pennsylvanian-age conglomerate, sandstone, siltstone, and shale is covered by mostly well-drained, acid soils of low fertility. The region is forested, with some agriculture and coal mining activities.
- The Plateau Escarpment (68c) is characterized by steep, forested slopes and high velocity, high gradient streams. Local relief is often 1000 feet or more. The geologic strat include Mississippian-age limestone, sandstone, shale, and siltstone, and Pennsylvanian-age shale, siltstone, sandstone, and conglomerate. Streams have cut down into the limestone, but the gorge talus slopes are composed of colluvium with huge angular, slabby blocks of sandstone. Vegetation community types in the ravines and gorges include mixed oak and chestnut oak on the upper slopes, more mesic forests on the middle and lower slopes (beech-tulip poplar, sugar maple-basswood-ash-buckeye), with hemlock along rocky streamsides and river birch along floodplain terraces.
- The Western Highland Rim (71f) is characterized by dissected, rolling terrain of open hills, with elevations of 400-1000 feet. The geologic base of Mississippian-age limestone, chert, and shale is covered by soils that tend to be cherty, acid, and low to moderate in fertility. Streams are characterized by coarse chert gravel and sand substrates with areas of bedrock, moderate gradients, and relatively clear water. The oak-hickory natural vegetation was mostly deforested in the mid to late 1800's, in conjunction with the iron-ore related mining and smelting of the mineral limonite, but now the region is again heavily forested. Some agriculture occurs on the flatter interfluvies and in the stream and river valleys: mostly hay, pasture, and cattle, with some cultivation of corn and tobacco.
- The Eastern Highland Rim (71g) has more level terrain than the Western Highland Rim (71f), with landforms characterized as tablelands of moderate relief and irregular plains. Mississippian-age limestone, chert, shale, and dolomite predominate, and karst terrain sinkholes and depressions are especially noticeable between Sparta and McMinnville. Numerous springs and spring-associated fish fauna also typify the region. Natural vegetation for the region is transitional between the oak-hickory type

to the west and the mixed mesophytic forests of the Appalachian ecoregions to the east. Bottomland hardwoods forests were once abundant in some areas, although much of the original bottomland forest has been inundated by several large impoundments. Barrens and former prairie areas are now mostly oak thickets or pasture and cropland.

- The Outer Nashville basin (71h) is a more heterogeneous region than the Inner Nashville Basin, with more rolling and hilly topography and slightly higher elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian-age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus, and commercial phosphate is mined. Deciduous forest with pasture and cropland are the dominant land covers. Streams are low to moderate gradient, with productive, nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. The Nashville Basin as a whole has a distinctive fish fauna, notable for fish that avoid the region, as well as those that are present.

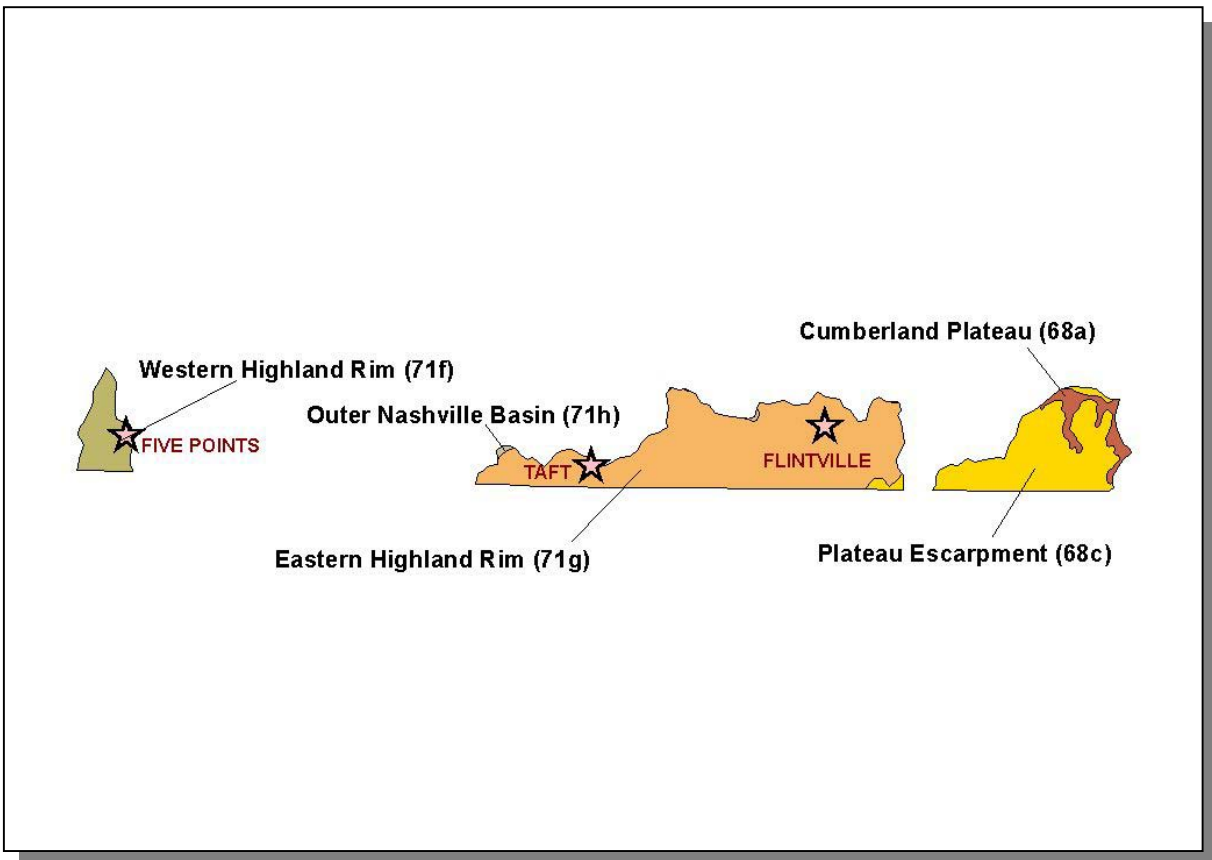


Figure 2-8. Level IV Ecoregions in the Tennessee Portion of the Wheeler Lake Watershed.
Locations of Five Points and Flintville are shown for reference.

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

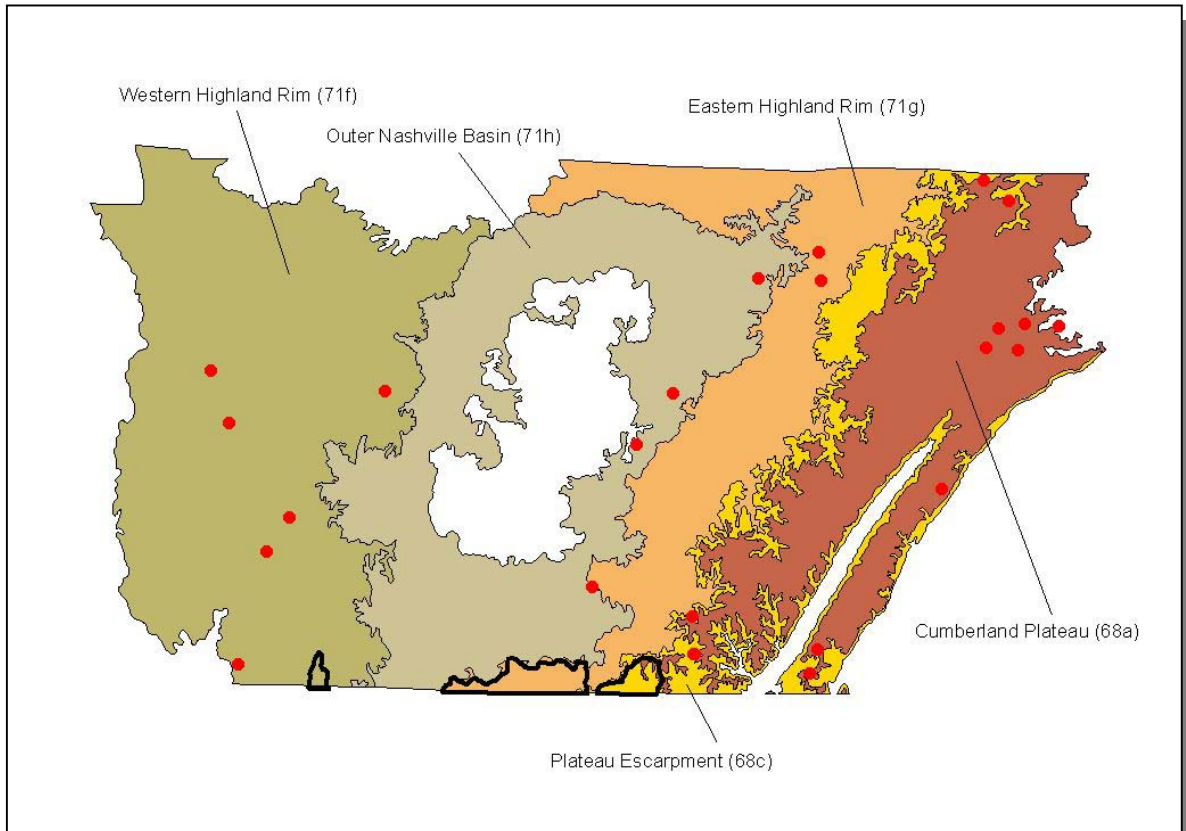


Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 68a, 68c, 71f, and 71h. The Wheeler Lake Watershed is shown for reference. More information is provided in Wheeler-Appendix II.

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	0
Insects	0
Mussels	4
Snails	1
Amphibians	0
Birds	2
Fish	2
Mammals	0
Reptiles	0
Plants	17
Total	26

Table 2-2. There are 26 Rare Plant and Animal Species in the Tennessee Portion of the Wheeler Lake Watershed.

In the Tennessee portion of the Wheeler Lake Watershed, there are two rare fish species and four rare mussel species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Etheostoma boschungii	Slackwater darter	LT	T
Percina burtoni	Blotchside darter	MC	D
Lampsilis virescens	Alabama lampmussel	LE	E
Pleurobema oviforme	Tennessee clubshell		
Toxolasma cylinderellus	Pale lilliput	LE	E
Toxolasma lividum	Purple lilliput		

Table 2-3. Rare Aquatic Species in the Tennessee Portion of the Wheeler Lake Watershed. Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service; LT, Listed Threatened by the U.S. Fish and Wildlife Service; MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at <http://www.state.tn.us/environment/nh/tnanimal.html>

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

<http://www.state.tn.us/environment/epo/wetlands/strategy.zip>.

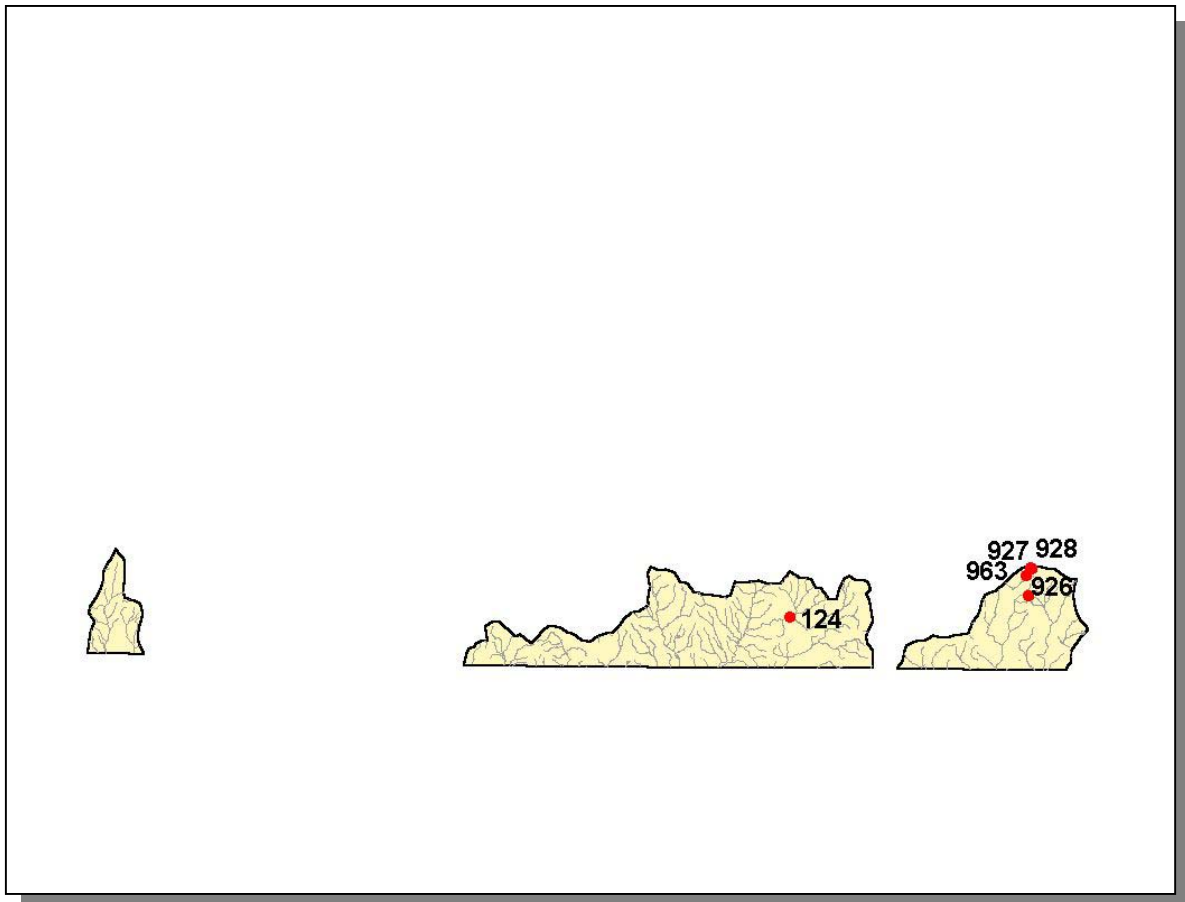


Figure 2-10. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Wheeler Lake Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands in the watershed. More information is provided in Wheeler-Appendix II.

2.7. CULTURAL RESOURCES.

2.7.A. Interpretive Areas.

Many local interpretive areas are common, most notably, John W. Barnes Area Park and Wells Hill Park.

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

<http://www.state.tn.us/environment/wpc/publications/riv/>

	NSQ	RB	RF	STREAM	NSQ	RB	RF
Bingham Cove Branch							
Grays Cove Creek	1			Harbin Branch Flint River	2		
Burks Branch	1			Hester Creek			3
Colts Creek	3			Horse Cove Creek	1		
Cottrell Springs Branch							
Flint River	2			Huckleberry Creek	2		
Dry Creek	1			Keller Creek	1		
Estill Fork Creek	1			Larkin Spring Branch Creek	1		
Flint River	2	2		Second Creek	3		1
Grays Cove Creek	1			Turkey Creek	1		
				Walker Creek	2		

Table 2-4. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed